

Claims

- Sub, a' > [c1] 1. A control device (21) for controlling an electric stapler (1), said control device comprising:
a microprocessor (22), an electrical drive motor (2) that is incorporated in a stapler (1) and whose drive shaft (9) drives a staple driver (13) in a forward and reverse motion that has a defined start point and a defined reversing point, and which staple driver drives, during its forward motion, a staple (15) into a workpiece (17); and
said control device (21) further comprising a sensor (23) that senses the rotational speed of the drive shaft (9) and the degree of rotation it has completed from the start point, the control device then transfers the sensed information to the microprocessor (22) that analyzes the obtained information and generates a control signal that controls the supply of current to the drive motor (2) whereupon the rotational speed of the drive shaft is regulated.
- [c2] 2. The control device according to claim 1, wherein said workpiece is a sheaf of paper.
- [c3] 3. The control device according to claim 1, wherein the supply of current occurs across a full bridge (27), whereupon the supply of current is controlled so that the rotational direction and speed of the drive shaft (9) is regulated.
- [c4] 4. A method for controlling an electric stapler, said method comprising:
arranging a sensor for detecting positions of a staple driver of the electric stapler during execution of a stapling process; and
utilizing a microprocessor to analyze sensed position information about the staple driver; and
controlling positional changes of the staple driver based on the analysis of sensed position information.
- [c5] 5. The method for controlling an electric stapler according to claim 4, further comprising:
affecting positional changes of the staple driver by supplying controlled magnitudes of electrical current to a drive motor that is interconnected with the staple driver.

- [c6] 6. The method for controlling an electric stapler according to claim 4, further comprising:
affecting directional changes in movement of the staple driver by supplying oppositely sensed electrical current to a drive motor interconnected with the staple driver.
- [c7] 7. The method for controlling an electric stapler according to claim 6, further comprising:
utilizing a circuit internal to the electric stapler for switching the sense of the electrical current that is supplied to the drive motor that is interconnect with the staple driver.
- [c8] 8. The method for controlling an electric stapler according to claim 4, further comprising:
detecting positions of a staple driver on a real time basis.
- [c9] 9. The method for controlling an electric stapler according to claim 8, further comprising:
computing speed of travel of the staple driver based on a series of positions of the staple driver taken on a real time basis.
- [c10] 10. The method for controlling an electric stapler according to claim 4, further comprising:
driving said staple driver via an electric motor having a drive shaft rotatably extending therefrom;
utilizing said sensor to detect and report rotational speed of the drive shaft.
- [c11] 11. The method for controlling an electric stapler according to claim 10, further comprising:
utilizing said sensor to detect and report rotational positions of the drive shaft.
- [c12] 12. The method for controlling an electric stapler according to claim 10, further comprising:
interconnecting the drive shaft with the staple driver via at least one toothed gear thereby establishing a directly proportional relationship between rotational characteristics of the drive shaft and translational characteristics of the staple

driver.

- [c13] 13. The method for controlling an electric stapler according to claim 10, further comprising:
interconnecting the drive shaft with the staple driver via a plurality of interacting toothed gears thereby establishing a directly proportional relationship between rotational characteristics of the drive shaft and translational characteristics of the staple driver.
- [c14] 14. The method for controlling an electric stapler according to claim 10, further comprising:
reversing the direction of travel of the staple driver based on a sensed degree of rotation of the drive shaft correlating to a completed stapling action.
- [c15] 15. The method for controlling an electric stapler according to claim 10, further comprising:
slowing the travel speed of the staple driver upon approach to a completion position of a stapling action.
- [c16] 16. The method for controlling an electric stapler according to claim 4, further comprising:
reversing the direction of travel of the staple driver when a completion position of a stapling action is sensed and prior to a detrimental load being imposed upon the staple driver and an associated powering transmission.
- [c17] 17. The method for controlling an electric stapler according to claim 16, further comprising:
arranging the associated powering transmission to include at least a drive shaft extending from a driving electrical motor, a plurality of interacting toothed gears and an interacting toothed rack.
- [c18] 18. The method for controlling an electric stapler according to claim 17, further comprising:
arranging the toothed rack to be a part of the staple driver.